

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-5. (Canceled).

6. (Currently Amended) A laser means as in claim 42, wherein said second cylindrical ~~lens (16e)~~ lens collimates said ~~beam 7(b)~~ beam into a collimated ~~beam (7e)~~ beam in a second plane perpendicular to the first plane.

7. (Currently Amended) ~~A laser~~ The laser means as in claim 6, wherein said second cylindrical ~~lens (16e)~~ lens directs a plurality of said collimated ~~beams (7e)~~ beams to substantially a same ~~spot (14)~~ spot.

8. (Currently Amended) ~~A Laser~~ The laser means as in claim 40, wherein said diode pumping ~~array (1)~~ array is held by a diode array ~~mount (3)~~ mount and wherein said optical means comprises adjusting ~~means (110)~~ means for adjusting the axis of the pump light ~~beam (7)~~ beam to a defined plane relative to the diode array ~~mount (3)~~ mount, which adjusting means includes at least one wedged ~~window (27, 127)~~ window.

9. (Withdrawn-Currently Amended) ~~A Laser~~ The laser means as in claim 8, wherein

———said diode ~~array (1)~~ array,

———said diode array ~~mount (3)~~ mount,

———said first cylindrical ~~lens (2)~~ lens is positioned nearby the diode ~~array (1)~~ array, preferably at the diode array ~~mount (3)~~ mount, and

———said adjusting ~~means (110)~~ means

———are fixed to a laser system ~~base (28)~~ base.

10. (Withdrawn-Currently Amended) ~~A Laser~~ The laser means as in ~~claim 9~~ claim 9, wherein said adjusting ~~means (110)~~ means further comprises at least one parallel window.

11. (Withdrawn-Currently Amended) ~~A Laser~~ The laser means as in ~~claim 10~~ claim 10, further comprising a mounting ~~frame (111)~~ frame for holding said diode array ~~mount (3)~~ mount and said at least one parallel window wherein said mounting ~~frame (111)~~ frame has a contact plane for fixing said mounting ~~frame (111)~~ frame to said laser system ~~base (28)~~ base.

12. (Withdrawn-Currently Amended) ~~A Laser~~ The laser means as in ~~claim 11~~ claim 11, wherein said pumping device mounting ~~frame (111)~~ frame has a side wall with an opening at which said at least one parallel window is arranged.

13. (Withdrawn-Currently Amended) ~~A Laser~~ The laser means as in ~~claim 11~~ claim 11, wherein the pumping device mounting ~~frame (111)~~ frame comprises three horizontal positioning ~~areas (115)~~ areas and preferably three vertical positioning ~~areas (116)~~ areas for mounting diode array pumping ~~device (103)~~ device at the laser system ~~base (28)~~ base in a defined position.

14. (Currently Amended) ~~A Laser~~ The laser means as claim 40, wherein said optical means comprises:

——— ~~a second lens (16a)~~ a first lens for collimating said partial beam in the vertical and in the horizontal plane and directing ~~it to the partial beam to~~ it to the partial beam to said spot, ~~which second lens is the first lens being~~ the first lens being positioned at a distance away from the diode pumping array corresponding ~~to the to a focal length of the second lens;~~

——— ~~a second cylindrical lens (17)~~

————— lens positioned at a distance away from the diode pumping array corresponding ~~to the sum of the to a sum of a focal length of the second~~ first cylindrical lens

and of twice the focal length of the ~~second~~first lens; and

~~——— a focusing lens (18)~~ a focusing lens for collimating said partial beam in a first plane and for focusing the pump light beam in a second plane perpendicular to the first plane.

15. (Currently Amended) ~~A Laser~~ The laser means as in ~~claim 40~~ claim 40, wherein said diode pumping ~~array (1)~~ array comprises a laser diode ~~bar (1e)~~ bar generating said partial beams which are combined to a pump light ~~beam (7)~~ beam.

16. (Currently Amended) ~~A Laser~~ The laser means as in claim 40 with an aspect ratio for the pump ~~beam (7)~~ beam of $>15:1$.

17. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser operating in the fundamental mode, ~~comprising~~ comprising:

e—— a laser means according to ~~claim 40~~ claim 40; and

e—— a solid state laser ~~medium (4)~~ medium which is excited by said laser means.

18. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 17, ~~characterized in that~~ wherein the cross-section of said elliptical beam spot has an aspect ratio of $>3:1$.

19. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 17, ~~characterized in that~~ wherein the thermal profile of the laser medium is smooth and enables fundamental mode laser operation.

20. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 17, wherein the laser mode is strongly elliptical within said laser ~~medium (4)~~ medium.

21. (Currently Amended) ~~A diode-pumped Laser as in claim 20~~ The diode-pumped laser as in claim 20, ~~characterized in that~~ wherein the aspect ratio for the laser mode is $>5:1$.

22. (Currently Amended) ~~A diode-pumped Laser as in claim 17~~ The diode-pumped laser as in claim 17, comprising cavity-forming means, whereby a reflective cavity

element closest to an entrance face of said laser medium is not in direct contact with said entrance face.

23. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 17, wherein the axis of said pump beam is positioned obliquely or even vertically to the axis of the laser mode.

24. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 17, wherein said laser ~~medium-(4)~~ medium comprises Nd:Vanadate.

25. (Currently Amended) ~~A diode-pumped Laser as in claim 17 with~~ The diode-pumped laser as in claim 17, further comprising a semiconductor saturable absorber (22) absorber for obtaining a stable modelocked average output power of several Watts.

26. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 25, where stable modelocked operation is obtained at a pulse energy density on the semiconductor saturable ~~absorber (22)~~ absorber which is lower than 10 times ~~the a~~ saturation energy density of said semiconductor saturable ~~absorber (22)~~ absorber.

27. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 25, where stable modelocked operation is obtained at a pulse energy density on the semiconductor saturable ~~absorber (22)~~ absorber which is lower than 0.5 mJ/cm².

28. (Currently Amended) A diode-pumped ~~Laser~~ laser with a laser means as in claim 42, comprising at least one of a single-pass or amplifier, a multi-pass amplifier or and a regenerative amplifier setup configured to generate at least one of for generating micro-Joule- or and milli-Joule-level laser pulse energies.

29. (Currently Amended) A solid state laser ~~medium (4)~~ medium excited by a laser means according to claim 40 ~~which that~~ is partly supported in at least two first ~~regions (11a, 11b)~~ regions contacting thermally conducting ~~material (12)~~ material, and with at least

two second regions adjacent to said first ~~regions (11a, 11b), regions,~~ the surface of said second regions contacting ~~material (13) material~~ with low thermally conductivity.

30. (Currently Amended) ~~A solid~~ The solid state laser ~~medium (4) medium~~ according to ~~claim 29 claim 29,~~ wherein the contact to said thermally conducting ~~material (12) material~~ is enhanced by a contacting medium.

31. (Currently Amended) ~~A solid~~ The solid state laser ~~medium (4) medium~~ according to ~~claim 30 claim 30,~~ wherein said contacting medium is at least one of indium ~~or~~ and thermally conducting glue.

32. (Currently Amended) ~~A solid~~ The solid state laser ~~medium (4) medium~~ according to claim 29, wherein the heat flow from the laser ~~medium (4) medium~~ substantially has an one-dimensionality.

33-39. (Canceled).

40. (Currently Amended) ~~A Laser~~ A laser means for producing an essentially ~~round or elliptical beam high aspect ratio spot,~~ comprising:

a diode pumping ~~array (1) array~~ with a plurality of emitters, wherein at least two of the emitters, each emitting a partial beam, are mounted in a horizontal array; and

optical means for producing a pump ~~beam (7) beam~~ by imaging each single emitter into a same ~~spot (6), spot,~~ wherein said optical means further ~~includes~~ includes:

_____ ~~an upstream~~ an upstream optical means to collimate said partial beam in a vertical plane, and

_____ ~~a downstream~~ a downstream optical means to collimate said partial beam in a horizontal plane, focus said partial beam in the vertical plane, and direct ~~it to said spot (6), said partial beam to said spot,~~ whereby ~~the~~ images of said emitters in said ~~spot (6) spot~~ form a smooth spot by an overlap of said images in a sense that if some of said emitters die or degrade, said spot will not substantially change ~~its a spot~~ intensity pattern.

41. (Currently Amended) ~~A Laser~~ A laser means for producing an ~~essentially round or elliptical beam~~ high aspect ratio spot, comprising:

a pumping ~~array (1)~~ array with a plurality of emitters wherein at least two of the emitters, each emitting a partial beam, are mounted on a horizontal array; and

optical means for producing a pump ~~beam (7)~~ beam by directing each partial beam to a same ~~spot (6)~~ spot as a partial beam that is collimated in at least one plane, wherein the optical means further ~~includes~~ includes:

_____ ~~a first~~ a first cylindrical lens (2) ~~lens~~ lens for collimating the strongly divergent pump light of said partial beam, wherein said first cylindrical ~~lens (2)~~ lens is positioned nearby said ~~emitters (1)~~ emitters at a distance corresponding to the focal length of the first cylindrical ~~lens (2)~~ lens; and

_____ ~~a first lens (5)~~ a first lens for collimating said partial beam in a horizontal plane and focusing said partial beam in a vertical plane and directing ~~it to said spot (6)~~ said partial beam to said spot, wherein said first ~~lens (5)~~ lens is positioned at a distance away from the diode pumping ~~array (1)~~ array corresponding to the focal length of the first ~~lens (5)~~ lens.

42. (Currently Amended) ~~A Laser~~ A laser means for producing an ~~essentially round or elliptical beam~~ high aspect ratio spot, comprising:

a diode pumping ~~array (1)~~ array with a plurality of emitters, wherein at least two of the emitters, each emitting a partial beam, are mounted in a horizontal array; and

optical means for producing a pump ~~beam (7)~~ beam by directing each partial beam to a same ~~spot (6)~~ spot as a partial beam that is collimated in at least one plane, wherein said optical means ~~includes~~ includes:

_____ ~~a first cylindrical lens (2)~~ a first cylindrical lens for collimating a strongly divergent emission of an emitter into a ~~beam (7b)~~ beam in a first plane, wherein said

first cylindrical ~~lens (2)~~ lens is positioned near the diode ~~array (1a)~~ array at a distance corresponding to the focal length of the first cylindrical ~~lens (2)~~ lens, and

~~_____ a second cylindrical lens (16e)~~ a second cylindrical lens for collimating said ~~beam (7b)~~ beam wherein said second cylindrical ~~lens (16e)~~ lens is positioned at a distance from the diode pumping ~~array (1a)~~ array corresponding to the focal length of the second cylindrical ~~lens (16e)~~ lens.

43. (Currently Amended) A diode-pumped ~~Laser~~ laser operating in a fundamental mode, comprising:

a laser means for producing a high aspect ratio beam comprising a diode pumping array and optical means for imaging a pump light beam ~~onto a~~ into a substantially asymmetrical spot with a smooth intensity profile; and

a laser medium which is excited by said pump light beam, wherein an axis of the pump light beam is positioned at least one of obliquely ~~or~~ and vertically to an axis of the fundamental mode.

44. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 43, wherein the fundamental mode is strongly elliptical within the laser medium.

45. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 44, wherein the fundamental mode has an aspect ratio of $>15:1$.

46. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 44, wherein the pump light beam has an aspect ratio of $>15:1$.

47. (Currently Amended) ~~A diode-pumped Laser~~ The diode-pumped laser as in claim 43, further comprising cavity-forming means, whereby a reflective cavity element closest to an entrance face of said laser medium is not in direct contact with said entrance face.

48. (Currently Amended) ~~A diode-pumped Laser~~The diode-pumped laser as in claim 43, wherein the laser medium is bonded to a heat sink on one side.

49. (Currently Amended) ~~A diode-pumped Laser~~The diode-pumped laser as in claim 48, wherein the pump light beam is incident on a top side of the laser medium.

50. (Currently Amended) ~~A diode-pumped Laser~~The diode-pumped laser as in claim 48, wherein the laser medium is a thin disc laser medium.

51. (Currently Amended) ~~A diode-pumped Laser~~The diode-pumped laser as in one of the claim 48, wherein the pump light beam has a double or multiple bounce configuration.

52. (Currently Amended) ~~A diode-pumped Laser~~The diode-pumped laser as in claim 51, wherein a bottom surface of the top side of the laser medium is coated for reflection of the pump light beam.

53. (Currently Amended) ~~A diode-pumped Laser~~The diode-pumped laser as in claim 48, wherein the laser medium is bonded to the heat sink by at least one of indium foil and glue.

54. (Currently Amended) ~~A diode-pumped Laser~~The diode-pumped laser as in claim 53, wherein the glue comprises thermally conductive glue.

55. (Currently Amended) ~~A diode-pumped Laser~~The diode-pumped laser as in claim 48, further comprising a modelocking device.

56. (Currently Amended) ~~A diode-pumped Laser~~The diode-pumped laser as in claims 55, wherein the modelocking device further comprises at least one of a semiconductor saturable absorber mirror and a stably intracavity-converted continuous-wave laser.

57. (Currently Amended) ~~A diode-pumped Laser~~The diode-pumped laser as in claim 48, comprising a frequency conversion device.